REMARKS

This amendment is in response to the Office Action dated 04/28/2003 in the captioned application.

Claims 20 – 32 are pending. Claims 14 – 19 are cancelled by this Amendment. Claims 1-13 having been cancelled as subject to restriction.

The Examiner rejected claims 14 –19 under 35 U.S.C.112, second paragraph based on several indications of "insufficient antecedent basis".

The Examiner has rejected claims 14-16 under 35 U.S.C.103(a) as being unpatentable over Boner et al US 6,625,763 ("Boner") in view of Roberts et al US 6,313,932 ("Roberts").

The Examiner has rejected claims 17-19 under 35 U.S.C.103(a) as being unpatentable over the combination of Boner and Roberts in further view of Takeuchi et al US 5,907,563 ("Takeuchi").

The Examiner also advised Applicants to revise Claim 15 to make it clearer.

In response, Applicants have cancelled claims 14 – 19 and added claims 20 – 32. New claims 20-32 are believed to cure each of the rejections under 35 U.S.C. 112, second paragraph..

New independent claim 20 is similar in language to cancelled claim 14; but now contains limitations that more clearly define the invention.

New independent claim 32 is a rewritten version of cancelled claim 14, but with all of the insufficiencies relating to unclear antecedent basis cured. Applicants in particular provide better definition of the memory cells and the repeating x-y submatrices within the cells, with the words:

"...said matrix of memory cells further comprising a repeating x-y submatrix, each said repeating x-y submatrix being arranged to receive a plurality of said segments comprising a single SDRAM physical page;...".

Applicants' invention activity antedates the prior art date of Boner (filing date of July 5, 2000). Since that date is less than one year prior to applicants' filing date of April 23 2001, Applicants submit the accompanying

AFFIDAVIT UNDER 37 CFR 1.131 by Dr. Richard R. Shively, a co-inventor of the invention herein. The AFFIDAVIT demonstrates conception of applicants' invention claimed in claims 20 - 32 prior to July 5, 2000 coupled with due diligence through to the filing of Applicants' patent application on April 23, 2001.

Dr. Shively's AFFIDAVIT submits documentary evidence of conception of essential elements of claim 20 and 32, and of certain other claims, beginning in or around July 1999 and continuing through to the filing of the instant application on April 23, 2001.

Notwithstanding the fact that Applicants can "swear behind" Boner, it is respectfully submitted that were Boner a statutory bar Boner cannot be combined under 35 U.S.C. 103(a) with Roberts and Takeuchi to render applicants' claims 20 – 32 "obvious".

The Examiner is correct that Boner teaches apparatus and method for interleaving a transmission payload data-bit stream through a free-space medium. Likewise, Boner uses a form of interleaving the details of which the Examiner meticulously points out (OA, p. 5).

Applicant's invention, however, addresses problems encountered in OPTICAL transmissions where the frequencies are, for example, 2.5 gigabit/second. This OPTICAL data stream is very susceptible to degradations caused by atmospheric scintillation that can result in total loss of as many as 20,000,000 bits.

Applicants' interleaving is based on exploiting the very large capacity of video DRAMS, using an address pattern that avoids having to refresh as often as prior art schemes. The prior art slows the refresh operation to the point where a high optical data rate of 2.5 gigabit/sec. could not be maintained.

Applicants take advantage of a characteristic of certain state-of -the-art SDRAM devices, that allows both READ and WRITE from and to the SDRAM devices at the device cycle rate within a page (i.e. row). This characteristic is a limitation in claim 20 and its dependent claims. Support for the limitation begins in the SUMMARY, p. 4 lines 12-19;and is carried forward throughout the specification.

It is noted that in implementing their interleaver Boner does not teach or suggest taking advantage of this characteristic. Moreover, Boner is not concerned with Applicants' field, which is to provide an interleaving scheme that reduces the effects on an OPTICAL signal of scintillation of a free space transmission medium. The wireless communication Boner refers to (col. 1, line 10) is radio frequency transmission which is not susceptible to scintillation nearly to the degree an OPTICAL frequency signal is.

The Examiner also reads too much into the Boner disclosure by contending at p. 6 of the Action that Boner's Abstract discloses that all READ and WRITE operations are performed a row at a time and hence the overhead required to write data into the RAM is substantially the same as the overhead to READ data back out. Boner never states that one follows from the other. Further Applicants find no mention of an intent to equalize the WRITE and READ operations in Boner. In any case, Boner has not realized - much less taken advantage of - the device cycle rate characteristic of SDRAMS that Applicants disclose and claim.

What Boner is concerned with, is an interleaving scheme that conserves power, an improvement useful in wireless telephony. Boner's description of related art, and Boner's Abstract makes this focus clear. The applicability if any of Boner's power-conserving interleaving to Applicants' invention would therefore be coincidental.

Applicants turn now to new claims 20 – 32 to show curing of the problems under 35 U.S.C.112 and to show distinctions over Boner and the other references.

Applicants new claim 20 overcomes a 35 U.S.C. 103(a) rejection on the combination of Boner with Roberts, by specifically requiring SDRAM devices to have the above-noted characteristic:

"....a buffer store comprising SDRAM devices for storing physical pages, each said SDRAM device having a cycle rate including a READ rate and a WRITE rate, and each said SDRAM device being both readable and writable at said cycle rate.... ".

The key to realizing applicants' invention is to employ such SDRAM devices together with the below "means" which was included in similar language in cancelled claim 14:

"means for addressing said WRITE and READ operations into and out of said submatrices to substantially redistribute said first page-change overhead operations to said second page-change overhead operation, thereby to equalize the rate of said WRITE and READ operations..."

Applicants' new claim 21 substitutes for cancelled claim 15. Claim 21, as did claim 15, deals with page-change operations as part of a remapping strategy. Basis in the specification for the parameter "K" is found at p. 14 in the paragraph beginning: "The general remapping strategy...".

Claim 22 substitutes for cancelled claim 16, and provides better antecedent bases for all terms. For example, the limitation "column" and the limitations "read and write rates" are found in independent claim 20.

Claim 23 states limitations not contained per se in cancelled claims 14-19; but is an alternative way of stating limitations of claim 22; hence its dependency on claim 21. Basis for claim 23 limitations is found at p. 5, in the paragraph beginning: "Address remapping...".

Claim 24 provides a limitation not recited in any cancelled claims, calling for the submatrices to be in the form of a square as stated in the specification at p.19 in the paragraph beginning: "Exact equalization...".

Claim 25 recites the limitations "means for sensing" found in cancelled claim 17. In view of the non-obviousness of claim 25's predecessor claims, it is believed that the disclosure of sensing means by Takeuchi is now irrelevant.

Claim 26 recites the limitations of cancelled claim 18, but in better form to more positively recite the "remote receiver".

Claims 27, 28, 29, 30 and 31 each recite limitations of claim 19, recast to recite the same limitations separately instead of grouped together in one claim.

New claim 32 distinguishes over Boner in at least the fact that Boner clearly does not "redistribute page change overhead operations from said WRITE operation to said READ operation, thereby to equalize the rate of

said WRITE and READ operations...". . This point was already made earlier.

Applicants briefly review the Roberts disclosure below.

Roberts is cited to show Reed-Solomon coding. As the Examiner concedes, Roberts does not teach "the details required to interleave the Reed Solomon codewords into interleaved Reed-Solomon codewords"..." whereas Boner teaches an interleaver for use in free space.". As applicants have shown above, Boner does not use the interleaving and overhead equalizing apparatus now claimed in new claim 20. Neither does Roberts. Therefore, a rejection of claims 20-32 on the same basis under 35 U.S.C.103 (a) as was applied to claim 14, ought not stand.

Applicants note with appreciation the acceptance of the drawings in the application.

Withdrawal of the reference Boner, allowance of new claims 20 – 32, and passage of the case to issue are respectfully solicited.

The Examiner is invited to contact applicants' attorney at the below telephone numbers and email address. to discuss any aspect of the case.

Please direct all correspondence in this application to:

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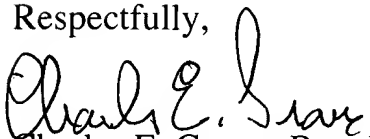
Respectfully,



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Enclosed: AFFIDAVIT UNDER 37 CFR 1.131 with Exhibits

CERTIFICATE OF MAILING I certify that on July 8 2004 I mailed the document named above in a U.S. Postal Service Office in Austin TX.

Charles E. Graves Charles E. Graves date 7/8/2004